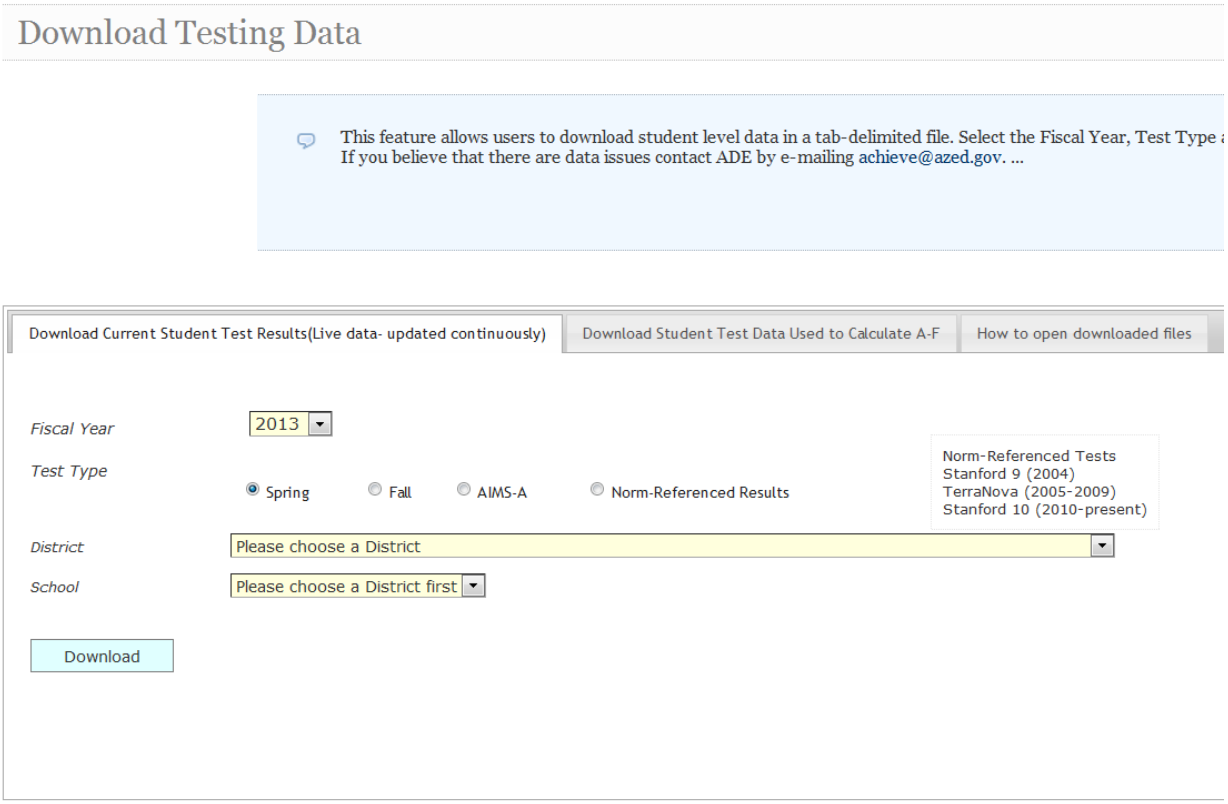
How to Estimate the Bottom 25% Using Microsoft Excel

Arizona Department of Education

Accountability Section

This guide should only serve as a tool in identifying who may appear in the Bottom 25% subgroup. Based on student mobility, the composition of this subgroup may change throughout the year. This tool would be of maximum benefit if recalculated periodically. The list of students produced by this calculation during the school year may not match identically to the list of students that would be counted as bottom 25% for accountability purposes in the A-F Letter Grades. The steps outlined throughout this guide require skills in Microsoft Excel such as filtering, sorting, cutting, pasting, copying, filling, and tabbed organization. Once the spreadsheets are built with proper formatting, records may be added and deleted as needed[1].

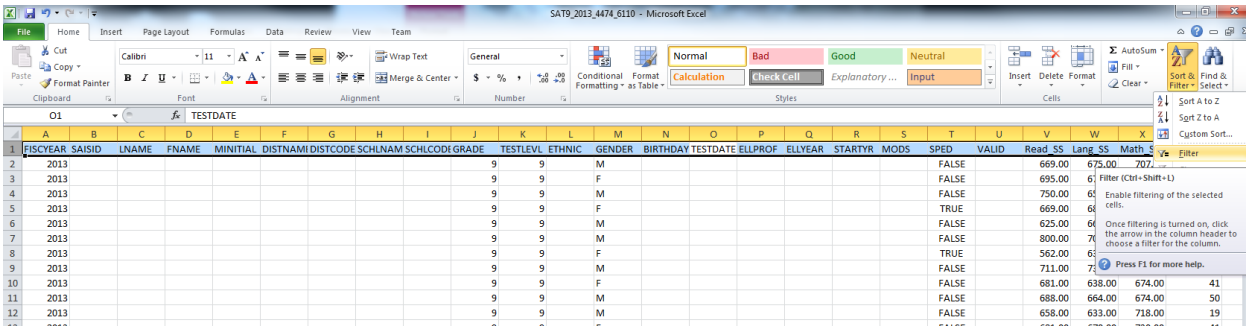
1. Identify all students in all tested grades enrolled at your school currently. Please note that for accountability purposes, the ADE will only include the 'full academic year' (FAY) students in this calculation for A-F Letter Grades; therefore, the list produced by an LEA earlier in the year may not be an exact match to the list that ADE produces during accountability season. Identify all their prior year test scores through either your own AIMS/Stanford 10 data download in Common Logon or a student test history report in Student details data interchange (transfer students).



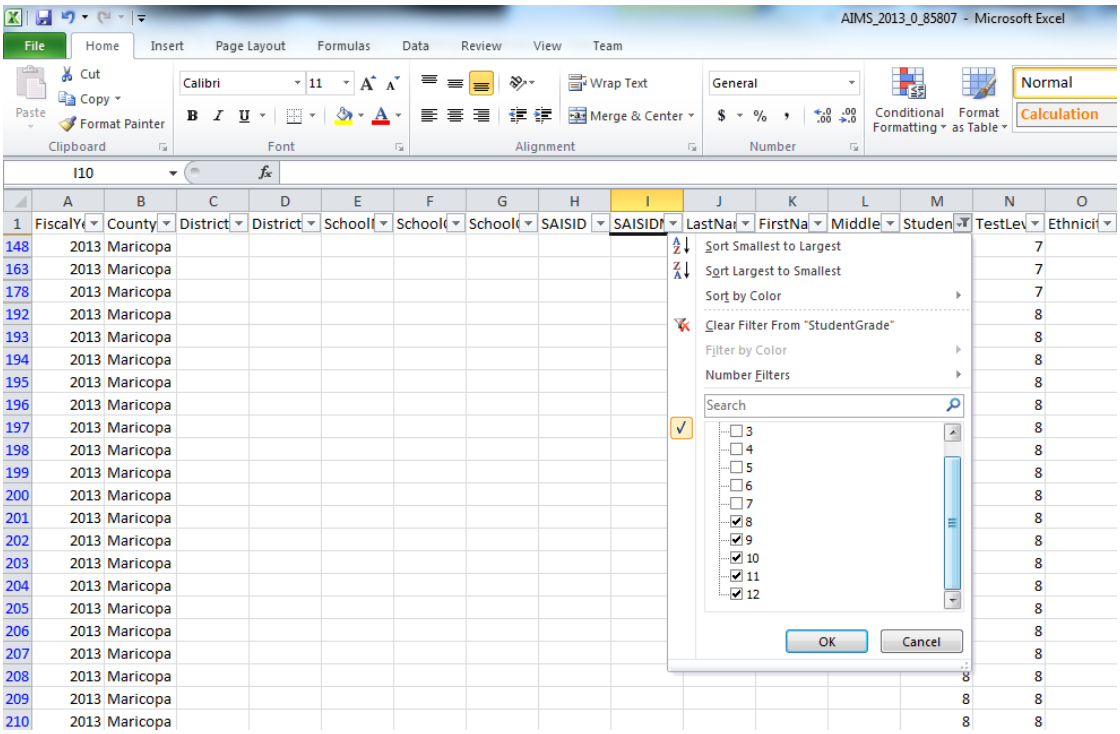
[1] The Bottom 25% of students generated by a school or LEA may differ from the Bottom 25% for which the school or LEA is held accountable. This may happen for several reasons including but not limited to enrollment changes, test record updates, etc.

2. Steps i-Xii use AIMS files downloaded from Common Logon. Remove students who are no longer enrolled at your school in the current fiscal year (Step 1). Only a few of the fields in the spreadsheet will be utilized for the purposes of estimating the Bottom 25% membership; the four variables needed are name, grade, perform value, and scale scores (names of variables as they appear in spreadsheet are given in the following parentheses). To add transfer students' data, include their **name, Grade (StudentGrade), Perform level (Perform),** and **scale scores (ScaleScore)** for both mathematics (Subject Mathematics) and reading (Subject Reading). Again, all other columns are unnecessary for this analysis.

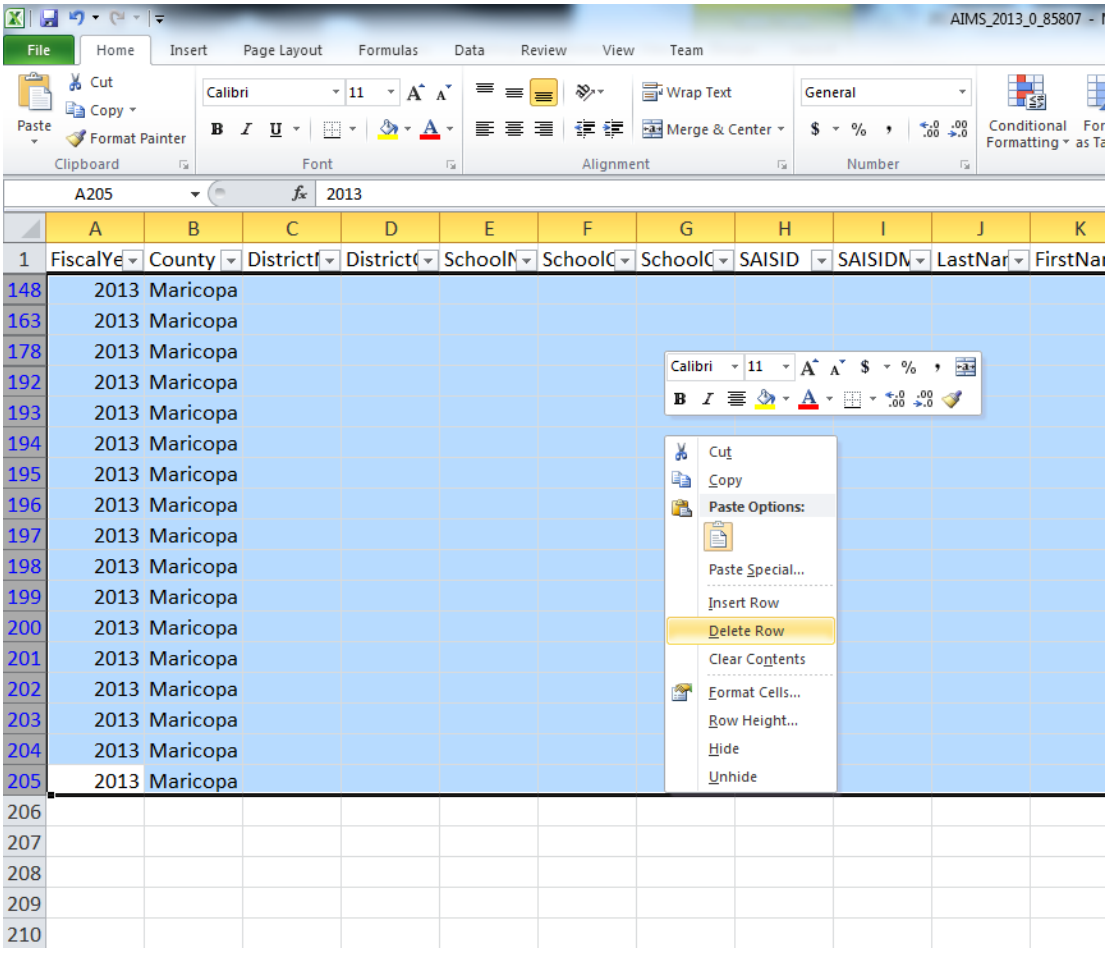
   A. Turn on filters in the header row.



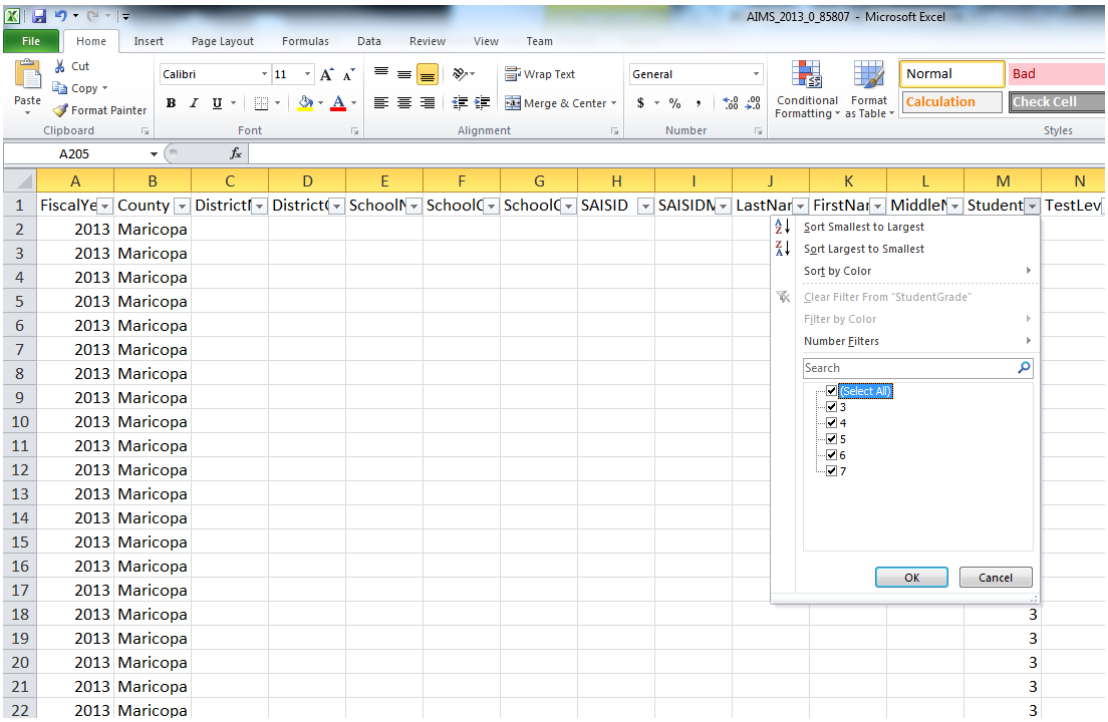
   B. Delete all student data from the AIMS data file where StudentGrade is 8 through 12 by filtering the StudentGrade variable and selecting only 8, 9, 10, 11, and 12.



C. These records should be deleted by highlighting the first row through the last row and hitting delete.



D. From the filter of StudentGrade, Select all. This should return only students in grades 3-7.



E. Sort all scale scores from least to greatest. Delete all records for students whose scale scores equal 0.

F. Separate all mathematics and reading results into separate tabs by filtering on subject. Filter only Subject Mathematics results. Highlight the first row of data through the last row of data and paste into a separate tab. Label this tab Mathematics.

G. Filter only Subject Reading results. Highlight the first row of data through the last row of data and paste into a separate tab. Label this tab Reading. The mathematics tab and the reading tab will be your working data sets. Science and Writing data are not included in this demonstration.

H. Calculate an adjusted difference score for each student taking into account the passing score for each subject and grade.

Grade	Reading Pass Score	Mathematics Pass Score
3	431	347
4	450	366
5	468	381
6	478	398
7	489	411

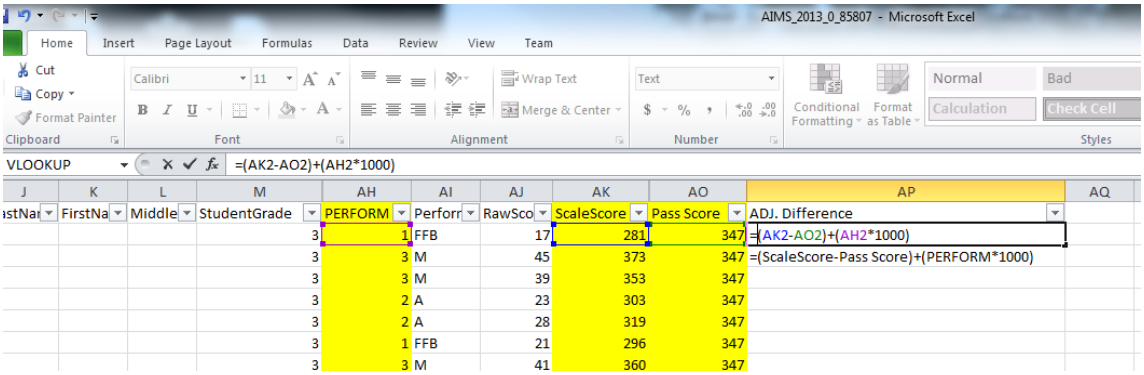
After adding a “pass score” column, each grade can be filtered and the passing score applied. A less advanced method of matching the corresponding pass score with the corresponding grade level involves adding the column titled “pass score” to the last column in both your Mathematics and Reading spreadsheet. Filter each grade level individually and input the appropriate pass score by subject and grade into the first row in the pass score column. Copy and fill down.

Repeat the filter, input, and copy for each grade level until all students have a corresponding pass score for both mathematics and reading. Remember, studentgrade should be the same as the passing cut score grade used because each grade level has its own passing cut score.

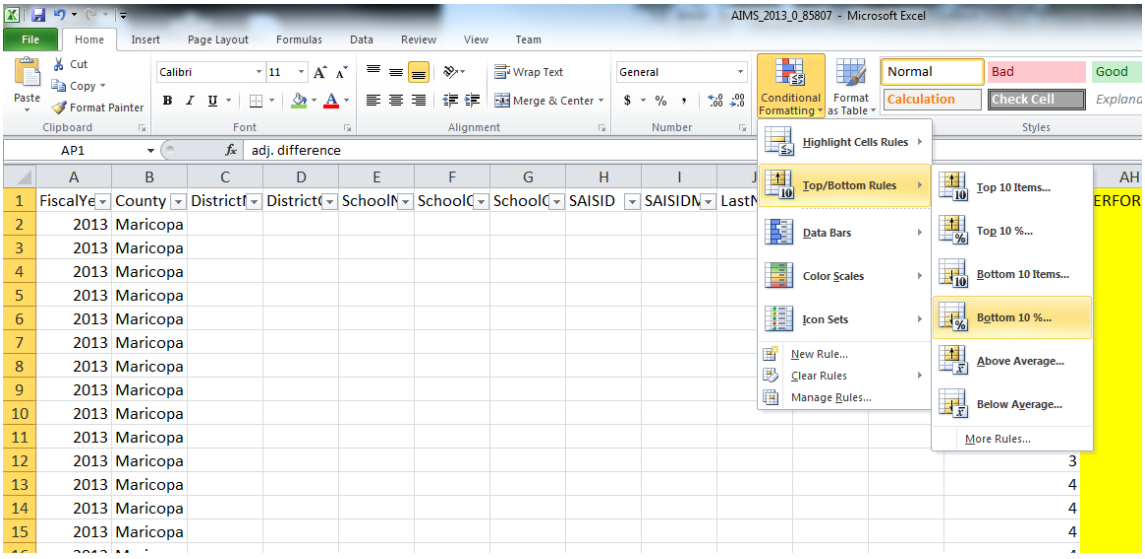
I. Create another column after the Pass Score column labeled 'Adj. Difference'. The Adj. Difference column requires the input of the following equation using the cell names (e.g., AK2) for each student record (or row):

= (ScaleScore column – Pass Score column) + (PERFORM column * 1000)

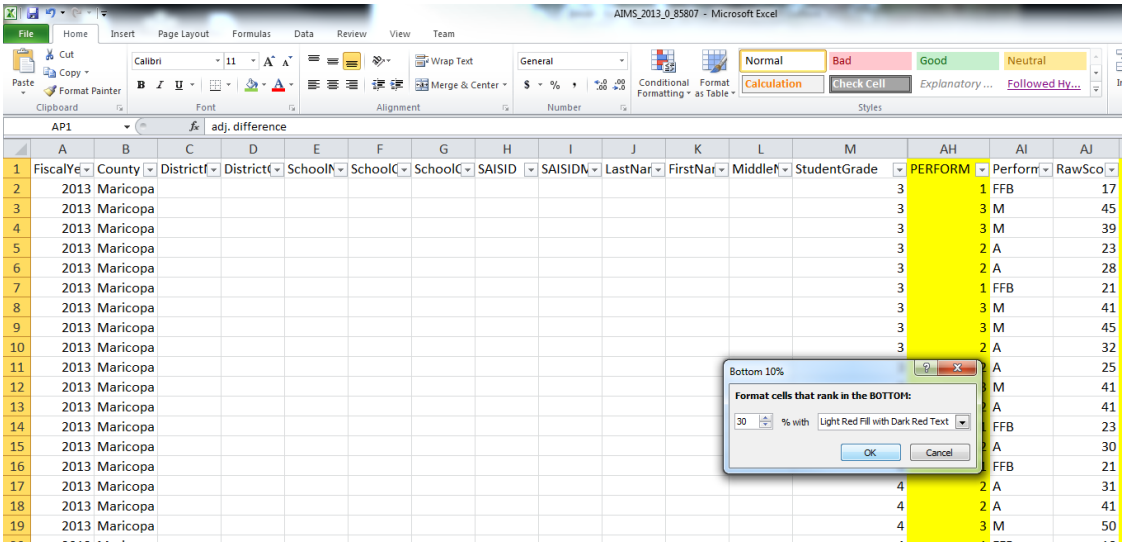
Users can click on a single cell and then copy and paste the formula down or select each of the four columns to calculate adjusted difference scores for everyone in the spreadsheet. Repeat this step for both Mathematics and reading tabs.



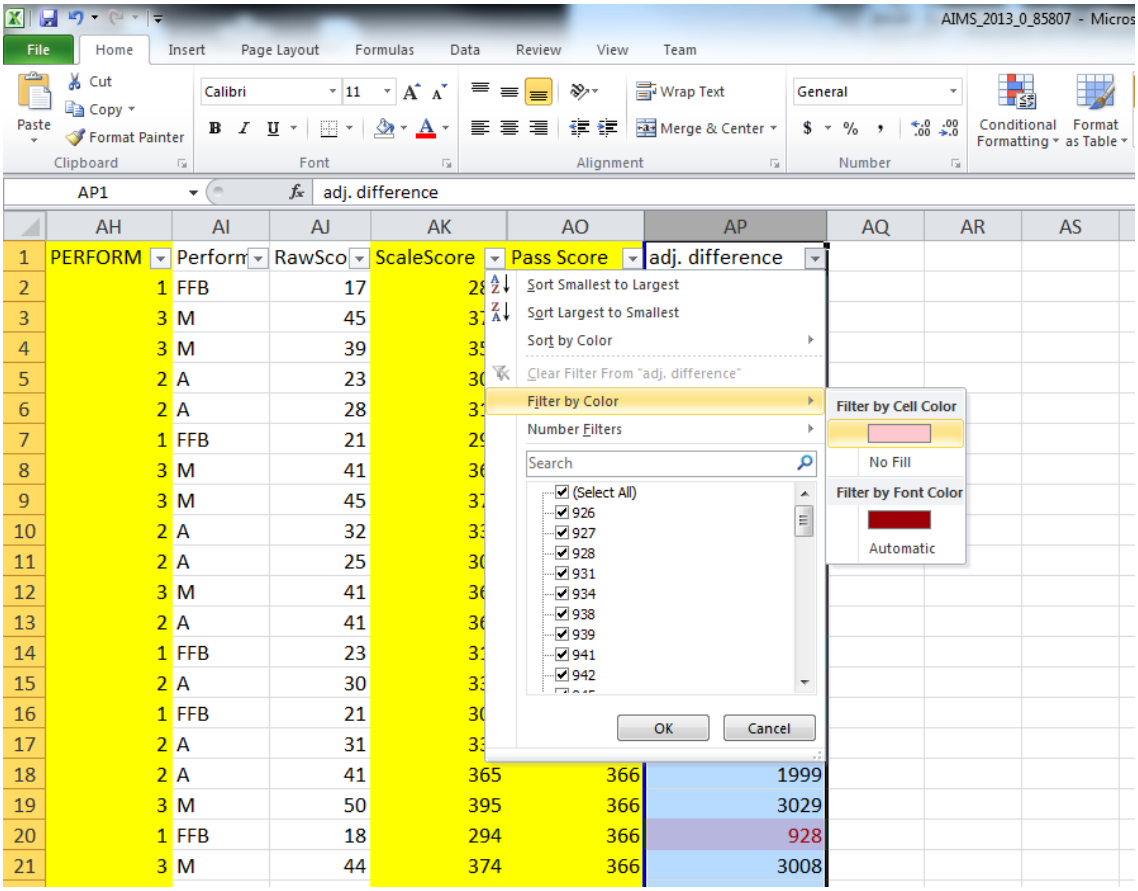
J. Once everyone has an adjusted difference score (there should be no negative values in the adjusted difference score column), highlight the entire 'Adj. Difference' column. Use the Conditional Formatting button in the Home menu. From Top/Bottom Rules, select Bottom 10%.



K. In the dialogue box, type in the bottom percentage you would like to identify. If trying to identify the FAY students then the ADE suggests over identifying this group (e.g., identifying the bottom 30%) to compensate for mobility throughout the year. The bottom 25% of students on the 10th day may withdraw; therefore, the Excel program can identify the bottom 30% of students (by typing in 30) in order to adjust for about a 5% mobility. Schools with high student mobility rates may want to identify an even higher percentage. For example, a school that had 7% attrition between the first ten days and the end of year testing might want to identify the bottom 32%. Repeat this step for both the mathematics and reading spreadsheet tabs.

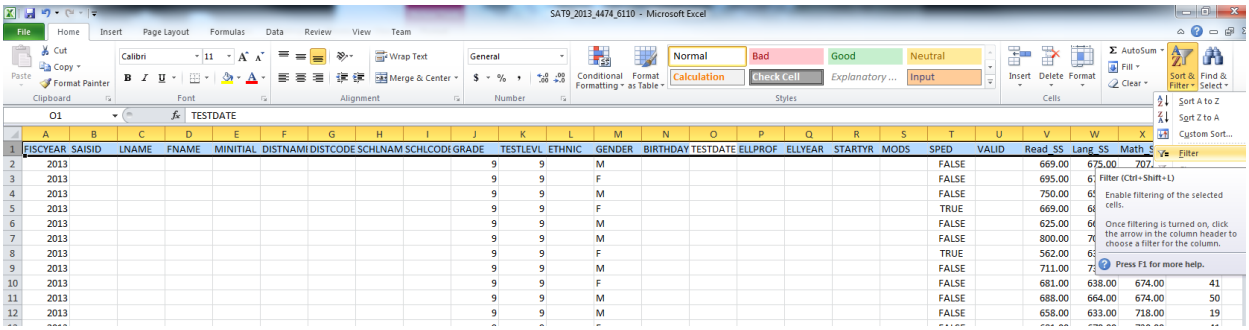


L. Filter the top of the 'Adj. Difference' column by color. The red colored cells represent students whose prior year AIMS test was in the Bottom 25% of students currently enrolled at your school. As students are removed from this spreadsheet because of withdrawals/student mobility, the Bottom 25% will fluctuate until FAY is determined by Spring AIMS for accountability purposes. This information is only intended to help schools estimate Bottom 25% membership; **the actual students in the Bottom 25% for accountability purposes may differ due to enrollment updates, test scores, and other business rules not explicitly outlined here.**



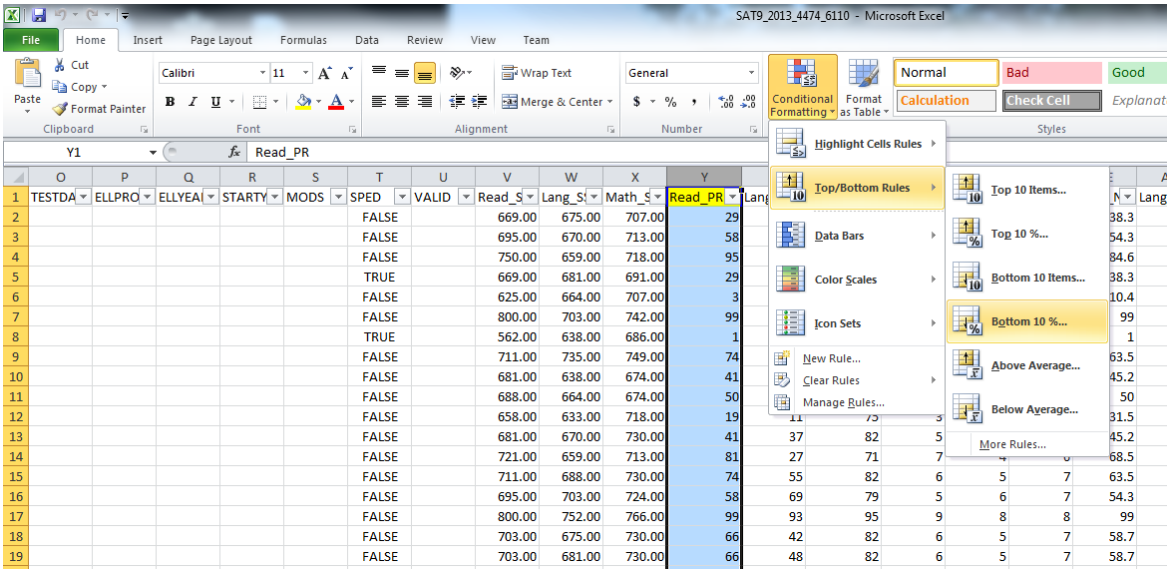
3. Steps A-I apply to Stanford 10 files downloaded from Common Logon. Remove students who are no longer enrolled at your school in the current fiscal year (Step 1). To add transfer students' data include their **name, grade, Mathematics PR and Reading PR data**. There is currently not an assessment report available for transfer students' Stanford 10 results; records may be requested from the former school if not provided at intake. All other columns are unnecessary for this analysis. Use grade to verify only data from students in grades 2 and 9. These grade levels are being calculated separately.

   A. Turn on filters in the header row.

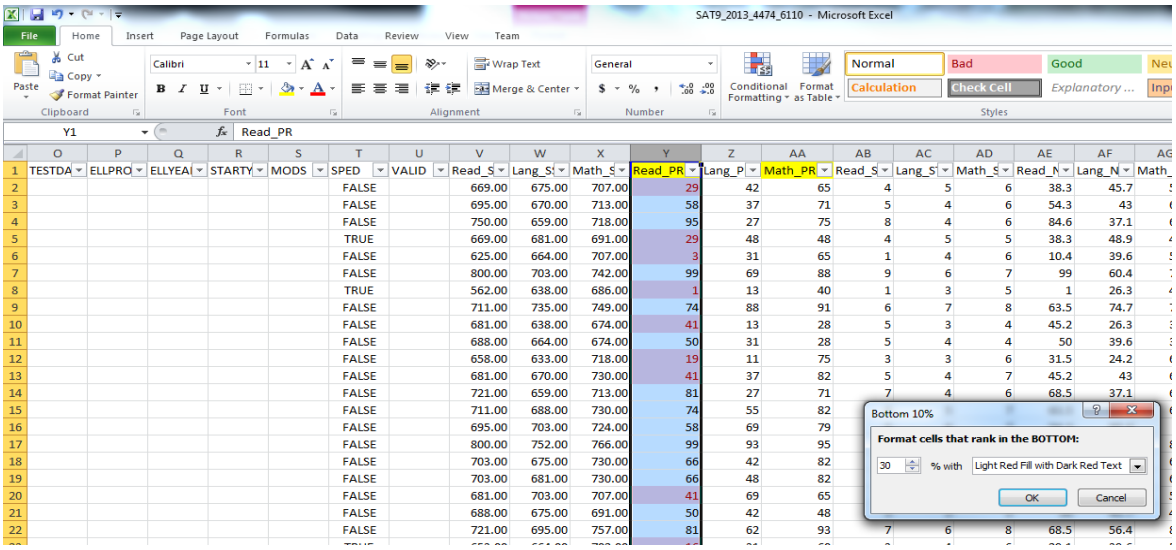


B. Highlight the entire Reading PR column and delete all PR equal to 0 by filtering and deleting selected rows.

C. Use the Conditional Formatting button in the Home menu. Select Top/Bottom Rules.

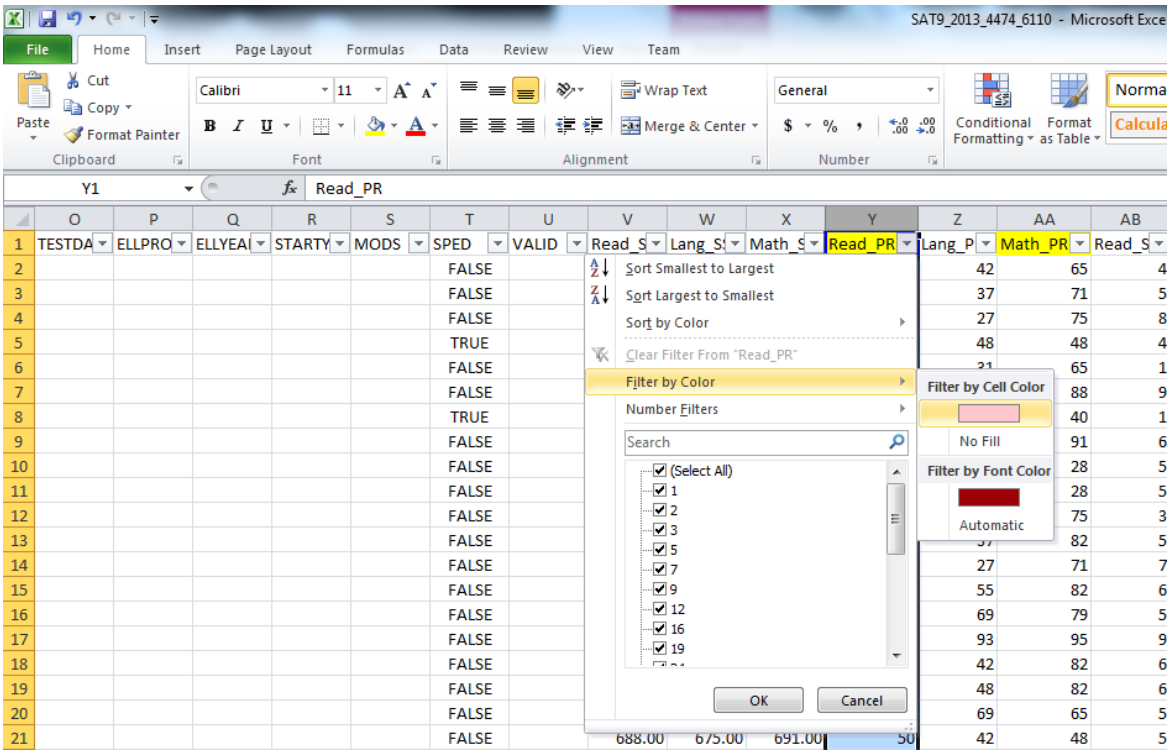


D. Select Bottom 10% feature and type in 30% to overestimate due to student mobility. The default shading will be red fill and red font.



E. Highlight the entire Mathematics_PR column. Repeat steps 6 & 7 for Mathematics_PR column.

G. Filter the top of the column for either Reading_PR or Mathematics_PR by color. The red colored cells represent students whose prior year Stanford 10 percentile rank score was in the Bottom 30% of students currently enrolled at your school[2].



Again, the steps outlined in this guide may produce bottom 25% indicators which differ in some ways from that produced by ADE. For example, only students who have a current year spring test score will be included in the Bottom 25% subgroup regardless of their prior year test score. Also, accountability for the Bottom 25% only includes students enrolled a full academic year (FAY) at the school. The steps outlined throughout this guide require skills in Microsoft Excel such as filtering, sorting, cutting, pasting, copying, filling, and tabbed organization. For accountability purposes, ADE identifies students in the Bottom 25% only for the previous fiscal year. For example, who is in the Bottom 25% for the current fiscal year has not been published by ADE nor can it be known preemptively.

[2] As students are removed from this spreadsheet because of withdrawals, who is in the Bottom 25% for accountability purposes will fluctuate until students take the Spring AIMS and are determined to be FAY.